USER'S MANUAL

KA10-10

KA line

KA Digital Audio Power Amplifier
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K-array is the new voice that sings aloud, "outside the choir", and whose performance is better than any other products.

Born on-the-road, in the PA world, where you get no discount, you have to give your best as fast as you can, often with a "compressed" budget, K-Array systems have been designed to give precise answers to precise needs.

Driven by new generation digital engine, with power/dimension/weight ratios that are ten times better than any other professional products, K-arrays can deliver the full spectrum of musical styles with clarity, power, punch, intelligibility and evenness across both volume levels and the frequency spectrum. These systems can be remotely controlled and come with a sophisticated on-board software, allowing the user to shape their performance to taste and needs. Inside K-array systems you will find something that only we can offer: the best in technology, proudly conceived, designed and produced in Italy. If they were cars, they would be Ferrari. Don't agree to pay for a simple brand, claim performance, and don't believe those who maintain that these products are only for few people, the only truth is that K-array systems are unique, but affordable and within everybody's reach!

HP Sound Equipment s.r.l.

SYMBOLS

This symbol, wherever it appears, alerts you to important operating and maintenance istructions in the accompanying literature. Read the manual!	Warning! Dangerous voltages: risck of electric schock.	This device complies with Restriction of Hazardous Substances Directive.
Separate collection of electrical and electronic devices. For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at www.scanning.datalogic.com	The item meets all the essential "Health and Safety" requirements of the revelant European Directives.	This symbol alerts the user to the presence of recommendations about product's use and maintenance.

1. SAFETY INSTRUCTIONS

CAUTION

• To reduce the risk of electric shock, disconnect the amplifier from the AC mains before installing audio cable. Reconnect the power cord only after making all signal connections.

• Connect the amplifier to a two-pole, three wire grounding mains receptacle. The receptacle must be connected to a fuse or circuit breaker. Connection to any other type of receptacle poses a shock hazard and may violate local electrical codes.

• Do not install the amplifier in wet or humid locations without using weather protection.

• Do not allow water or any foreign object to get inside the amplifier. Do not put objects containing liquid on, or near, the unit.

• To reduce the risk of overheating the amplifier, avoid exposing it to direct sunlight. Do not install the unit near heat emitting appliances, such as a room heater or stove.

• No naked flame sources such like lighted candles should be placed on the device.

• The amplifier should be placed so that its location does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, carpet, or similar surface that may create an obstacle for the ventilation openings.

• CAUTION, RISK OF ELECTRIC SHOCK, DO NOT OPEN. This amplifier contains potentially hazardous voltages. Do not attempt to disassemble the unit. The unit contains no user serviceable parts. Repairs should be performed only by factory trained service personnel.

• Be sure that both voltage set by the selector on the device and AC Power have the same value.

KA10-10

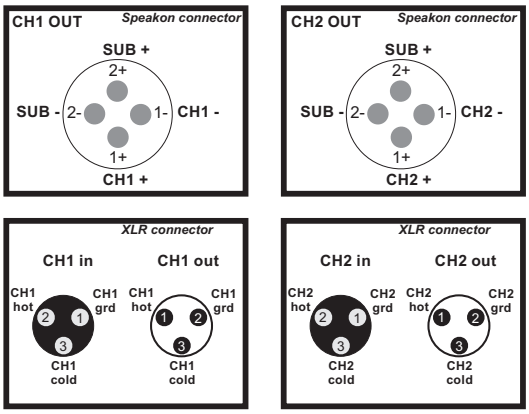
2. INTRODUCTION

The KA professional rack amplifier line has been designed to give answers to all the needs of touring and installation applications in which a large amount of power is needed together with the maximum flexibility, over low sizes and weight. The sophisticate electronics on-board allow to reach outstanding output power levels with over-high efficiency. DSP on-board can provide perfect signal processing for all K-array products, providing safe working conditions and a large choice of dedicated presets to solve the most parts of the needs of high-end applications. A dedicated remote control ensures a constant connection with all the units, allows the total management of the presets installed and the possibility of the download of new ones.

3. INCLUDED ACCESSORIES

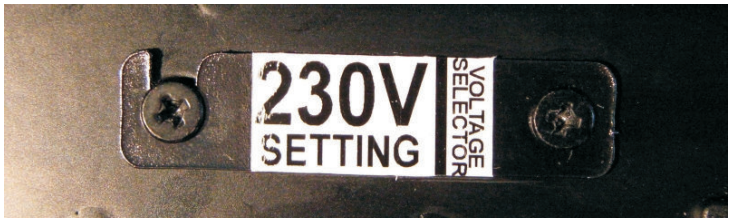
- 2 Rack adapters
- 2 xlr Neutrik cable mt. 0,5
- 1 Lan cable, 8 poles cat5
- 1 adjustment pen screwdriver
- 1 software and utilities CD
- 1 User's manual

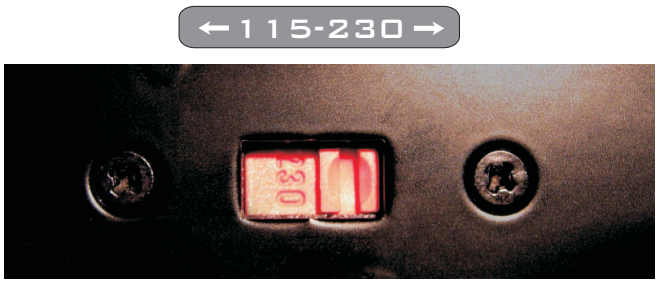
4. WIRING



5. VOLTAGE REQUIREMENTS

KA 10 operates safely and without audio discontinuity if the AC voltage stays within either of two operating windows: 95-125 (voltage selector on 115 V) or 195-250 V (voltage selector on 230 V), at 50 or 60 Hz.





The device is default set to be connected to 230 V AC Power. To use the device on a 115 V AC Power you need, before connecting it, to move the voltage selector's cover, just loosening the two screws, and to choose the correct use voltage by the red switch. Be sure that both voltage set on the selector and AC Power have the same value . Always close the voltage selector's cover before connecting the device to AC Power. Change the label that points out the correct voltage in use..

CAUTION

Connecting a 115V system on a 230V AC Power causes heavy damages to the device and serious risk for users .

6. FRONT PANEL

Preset selector
(push one to change, keep 10 sec to store)

Dual / Link switch
(Dual mode Stereo independent channels / Link CH1 IN to CH1 and CH2 OUT)

Display
(ID number - Preset load)

Power switch

Address selector
(rotary x10 - x1)

9 cm

44,5 cm

20 cm

7. REAR PANEL

CH1 Speakon OUT
(1+ 1-)
Sub Speakon OUT
(2+ 2-)

CH1 XLR balanced parallel connectors

CH2 XLR balanced parallel connectors

Powercon IN

Input level PAD
Ground lift switch

Powercon OUT
max 15A

CH2 Speakon OUT
(1+ 1-)
Sub Speakon OUT
(2+ 2-)

RS485 Remote control
(Parallel)

8. DSP CONTROL & REMOTE CONTROL

A powerful DSP manages all the functions of the speakers. Each system can store on board 16 preset that can be recalled pushing the PRESET button. Once the preset will appear on the lower line of the display it will become automatically available after few seconds. If you desire to set a preset as "default" you just need, once selected it, to keep pressed for five seconds the PRESET button. After that, this preset will automatically be recall each time you will switch on your module. It is also possible to remote each module by an RS485 serial port. In order to remote your system, you need to set each module on a different address, so that, in your chain, no one module will have the same address. Two rotary encoders allow you to set the desired address number that will appear on the top line of the display. Using the remote control software it is possible to mute each system, select a desired preset loaded on-board or download a new preset pack.

For remote control operation please refer to REMOTE CONTROL AND SOFTWARE MANUAL in the next pages.

8.1 Cloner function & preset systems

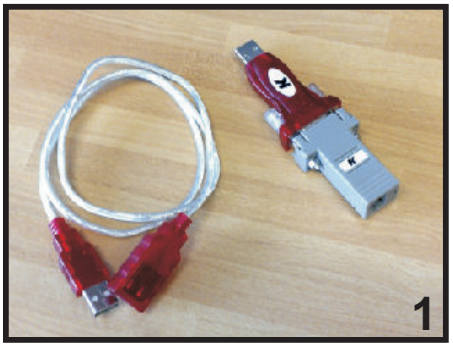
It is possible to clone the entire presets bank from Speaker to Speaker without any PC connected. We will call SpeakerA the one with the presets bank that you want clone, and SpeakerB the one that will be upgraded.
Set the SpeakerA on ID 99, will appear CLONER on the display
Keep SpeakerB on any ID number between 10 and 90.
Turn off both the speakers and connect by a RJ45 8 poles cable
Turn on the SpeakerB and after the SpeakerA
SpeakerA will start to clone, on the display will appear a cont down (00/15, 01/15, etc)
Wait till 20 seconds after 15/15
Change the ID of the SpeakerA to any other ID and turn off both Speakers
Turning on the SpeakerA check that it is on mode 16x16 and NOT 4x4.
If SpeakerA is in mode 4x4, just turn off the speaker and keep press the Preset button during the turning on
The preset are cloned to the SpeakerB.

9. REMOTE CONTROL SOFTWARE

1 . To connect the K-array modules to a PC, it is needed a RS485-USB adapter, we recommend the K-USB adapter (pic.1).

K-USB

USB to RS485 adapter



Connect the K-usb to a PC and install the drivers required included in the CD-ROM.

SYSTEM REQUIREMENTS

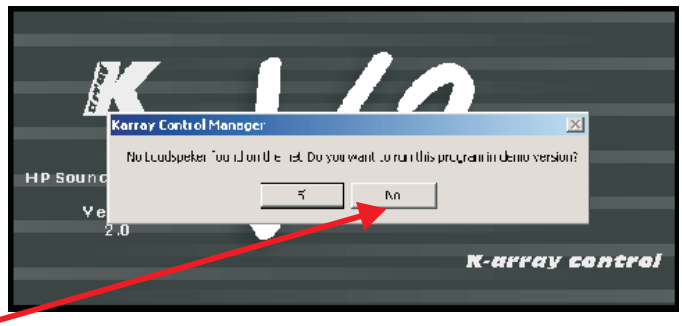
Operating systems:
Win98/98SE/Me/2000/XP/Vista

Minimum requirements:
CPU 300 MHz
RAM 128 Mb

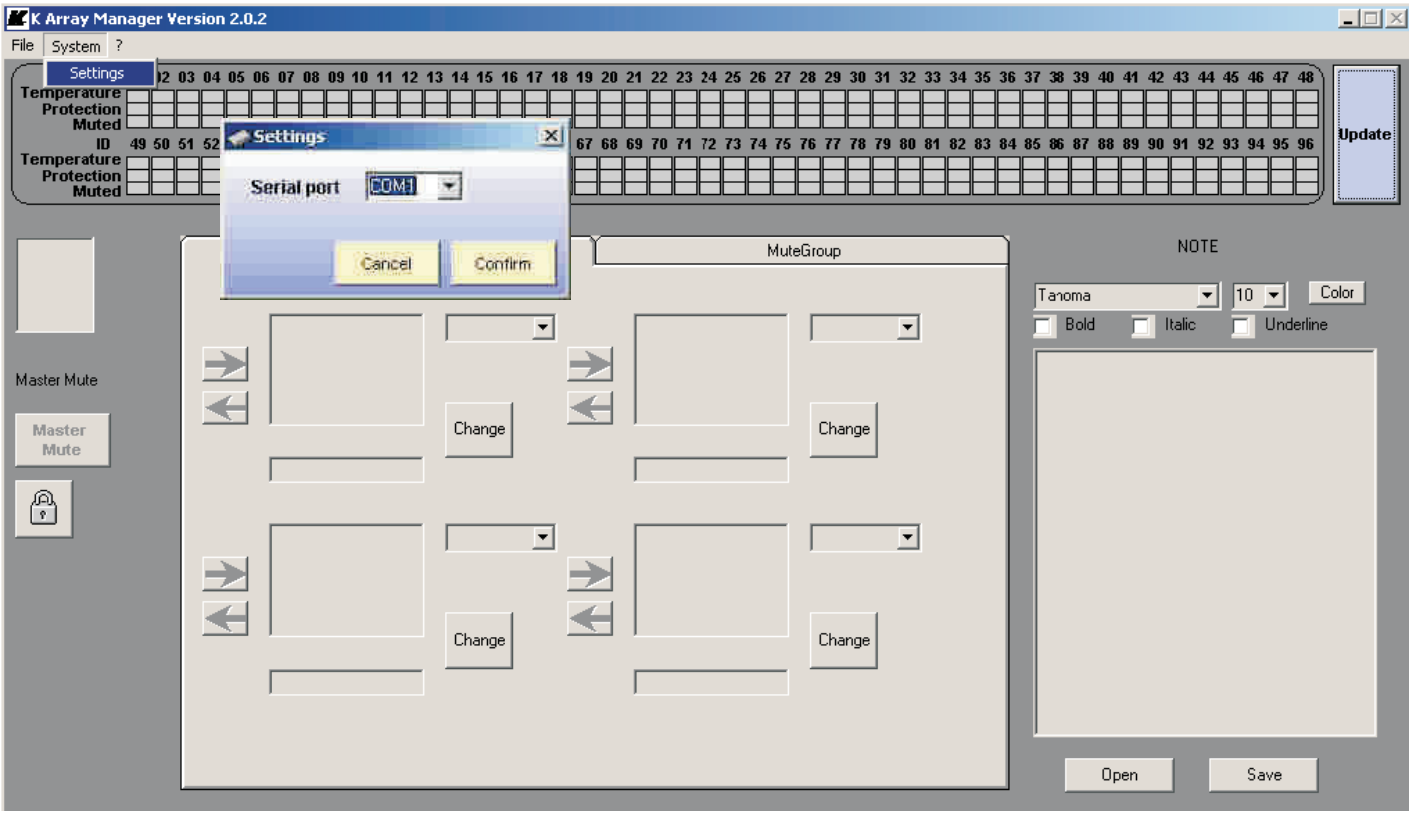
Recommended requirements:
RAM 512 Mb

2 . Install the K array control software from installer in the CD-ROM

2.1 Start the Karray_manager_V2 from Windows - Start - Software - Karray_manager_V2

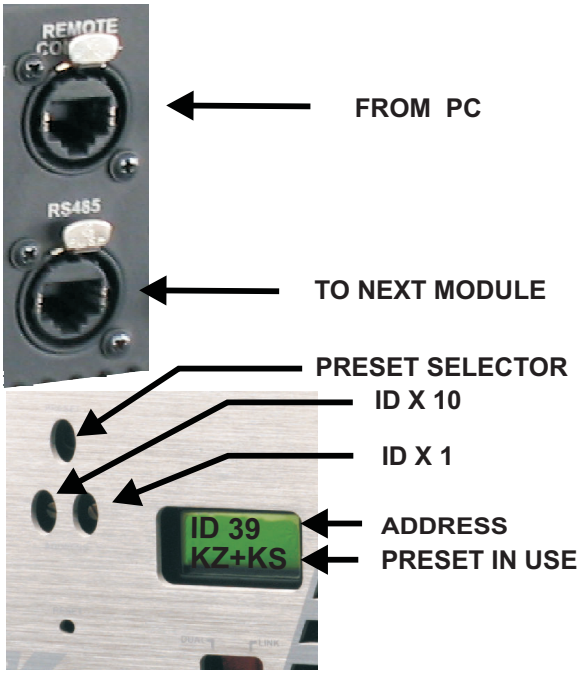


2.2 Click on NO when ask for demo mode start



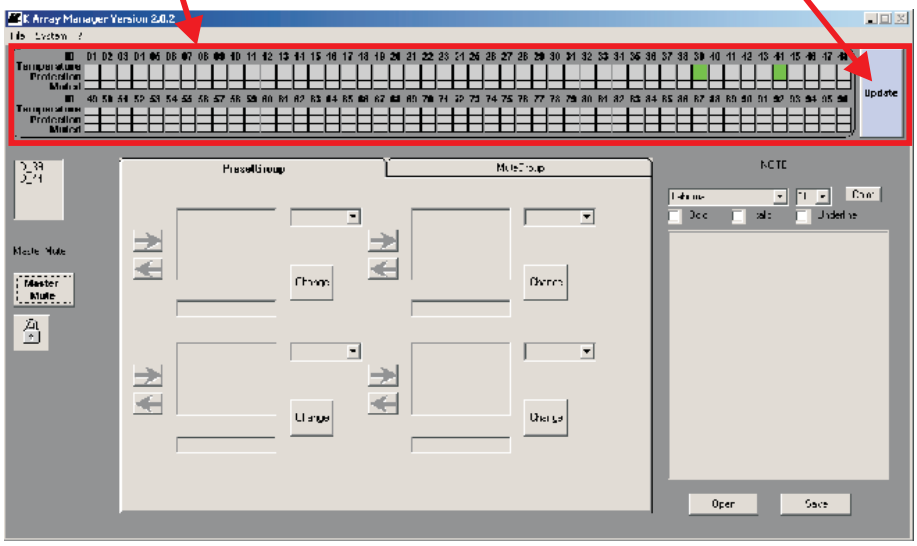
2.3 Click on System - Settings to configure which COM port use, the COM port of K-USB, usually is the higher number.
If you don't find, you can check it on windows-control panel-system-hardware-COM Port

3 . ID setting

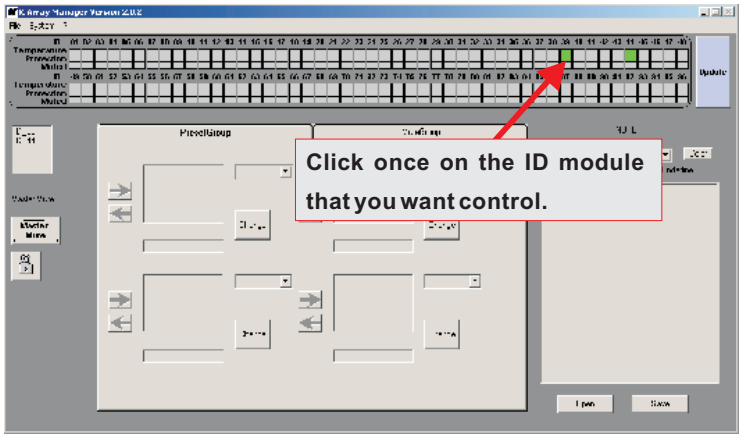


On this bars you can see all the modules connected in your net.

Pressing this button you can have a refresh of the modules connected.



4 . Single module control



This frame describes the state of all the loudspeakers on the net. The colour of the little rectangles into this frame represents the status of the loudspeakers. Each loudspeaker has three rectangles. Here there is the meaning of the rectangle's colour.

Two rectangles on top:

Both rectangles grey: the loudspeaker is not present on the net.

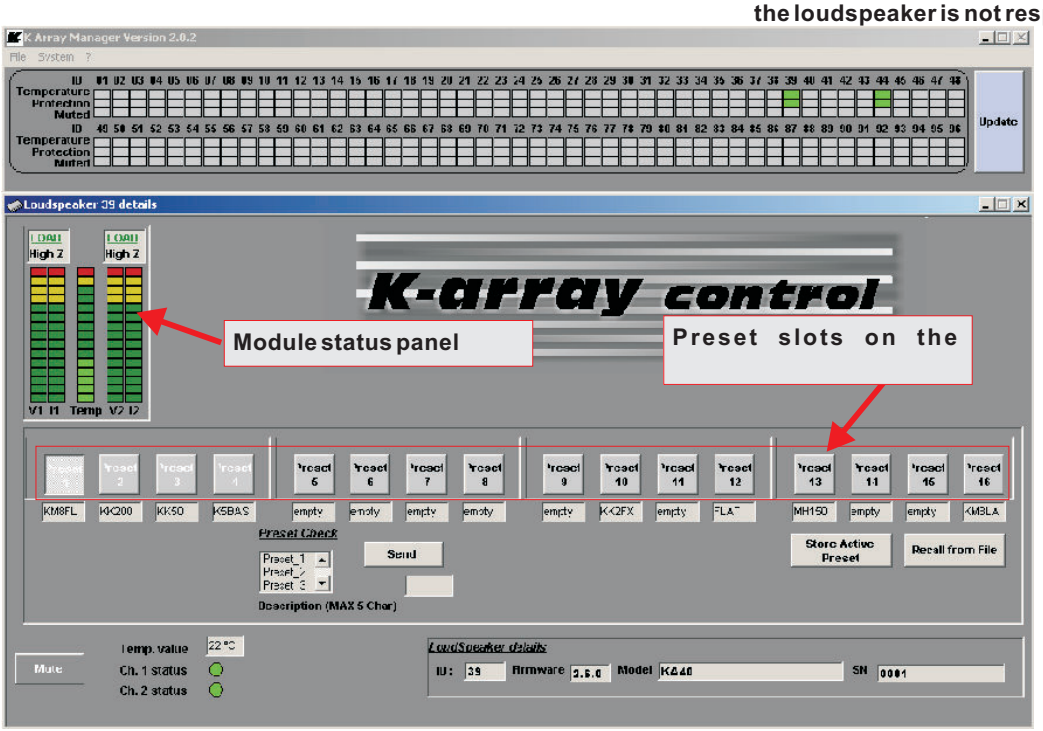
Temperature rectangle red: one module inside that loudspeaker is over-temperature.

Temperature rectangle green: all modules inside that loudspeaker have a good temperature.

Protection/Fail rectangle red: at least one module inside that loudspeaker is in protection.

Temperature rectangle green: all modules inside that loudspeaker are working properly.

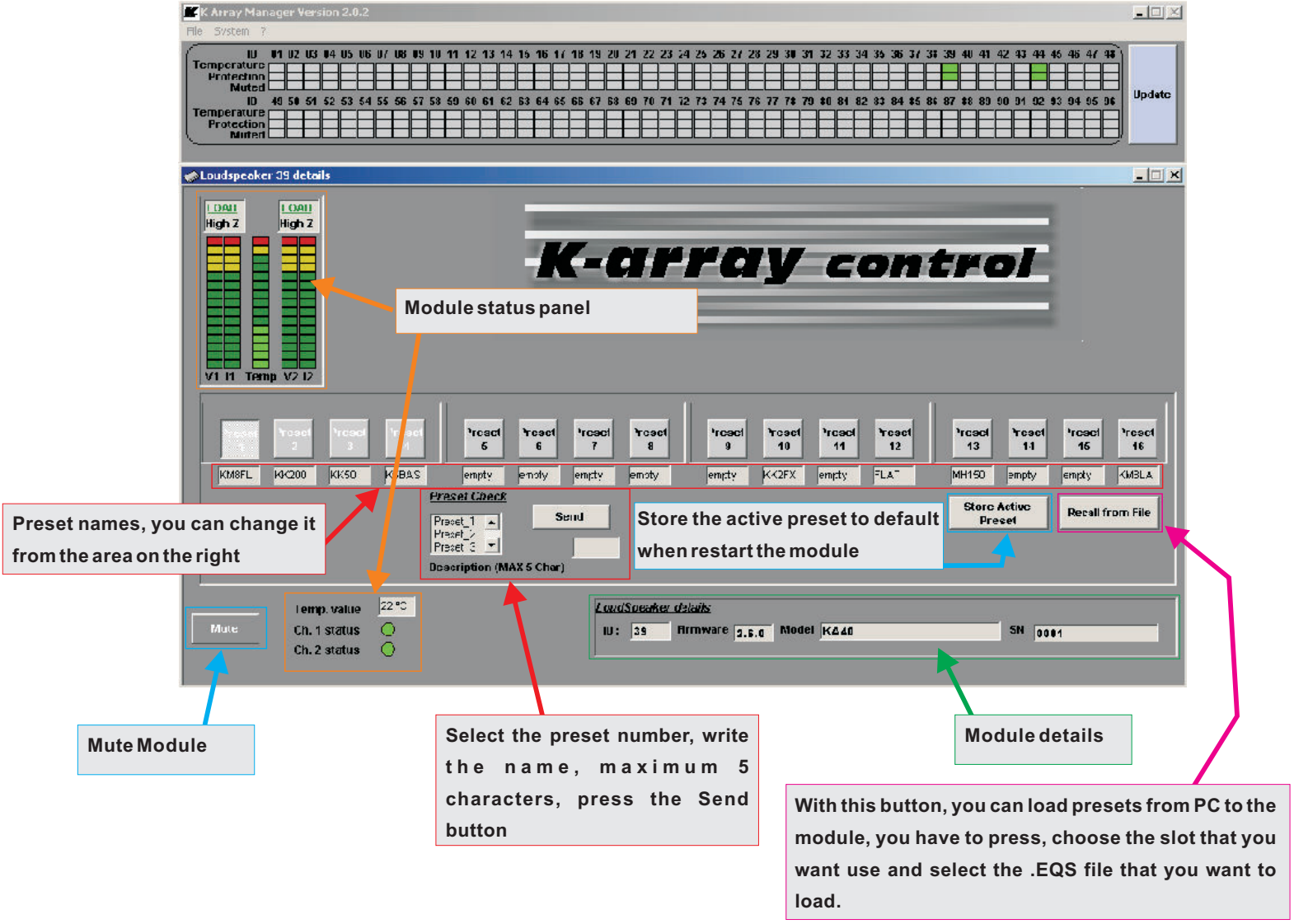
Temperature rectangle black: if this rectangle is black it means that the loudspeaker is not responding.



The main causes of this malfunction are loss of power supply and loss of serial connection between the hub and the loudspeaker. Check the hardware. If this rectangle is black will be black also the Protection/Fail.

Protection/Fail rectangle black: see above.

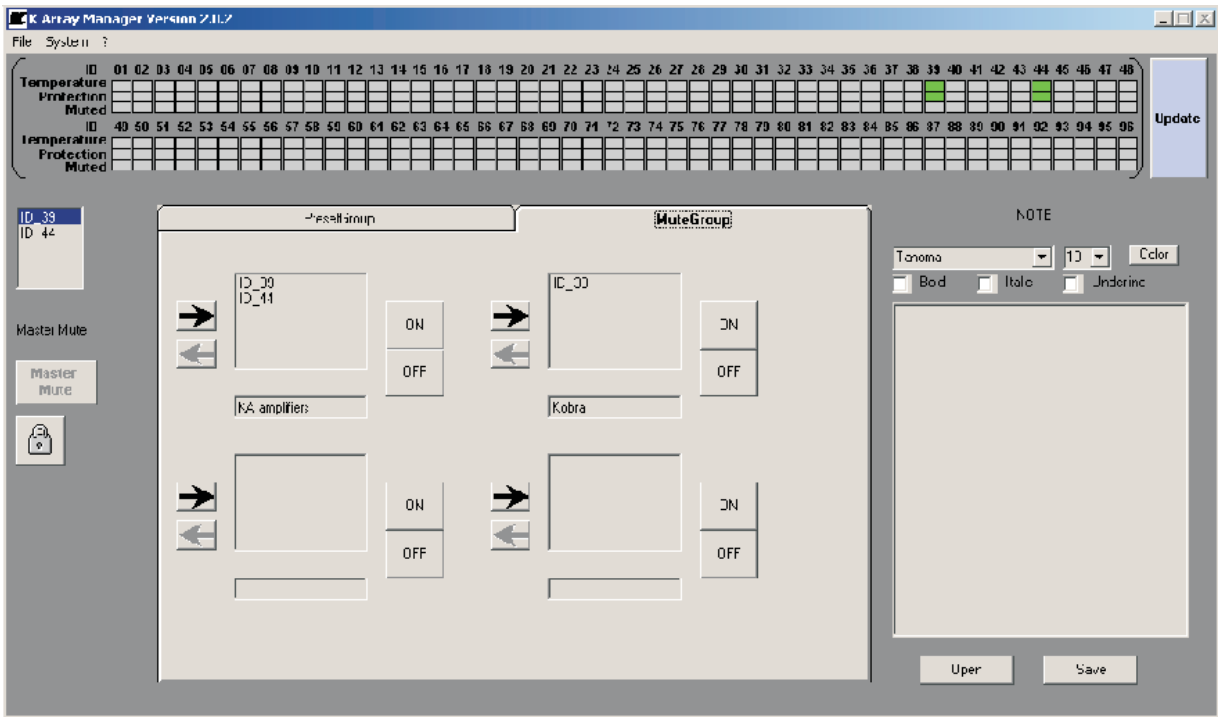
The remaining rectangle: Is related to the mute function; if red, the related loudspeaker is in "mute" status.


Module status panel
Preset names, you can change it from the area on the right
Store the active preset to default when restart the module
Mute Module
Select the preset number, write the name, maximum 5 characters, press the Send button
Module details
With this button, you can load presets from PC to the module, you have to press, choose the slot that you want use and select the .EQS file that you want to load.

5. Mute groups

On the Mute Groups window, you can manage the modules Mute as groups, up to 4 different.

5.1 Choose the modules from the list on the right
Press the right arrow of the group that you prefer, to add the modules

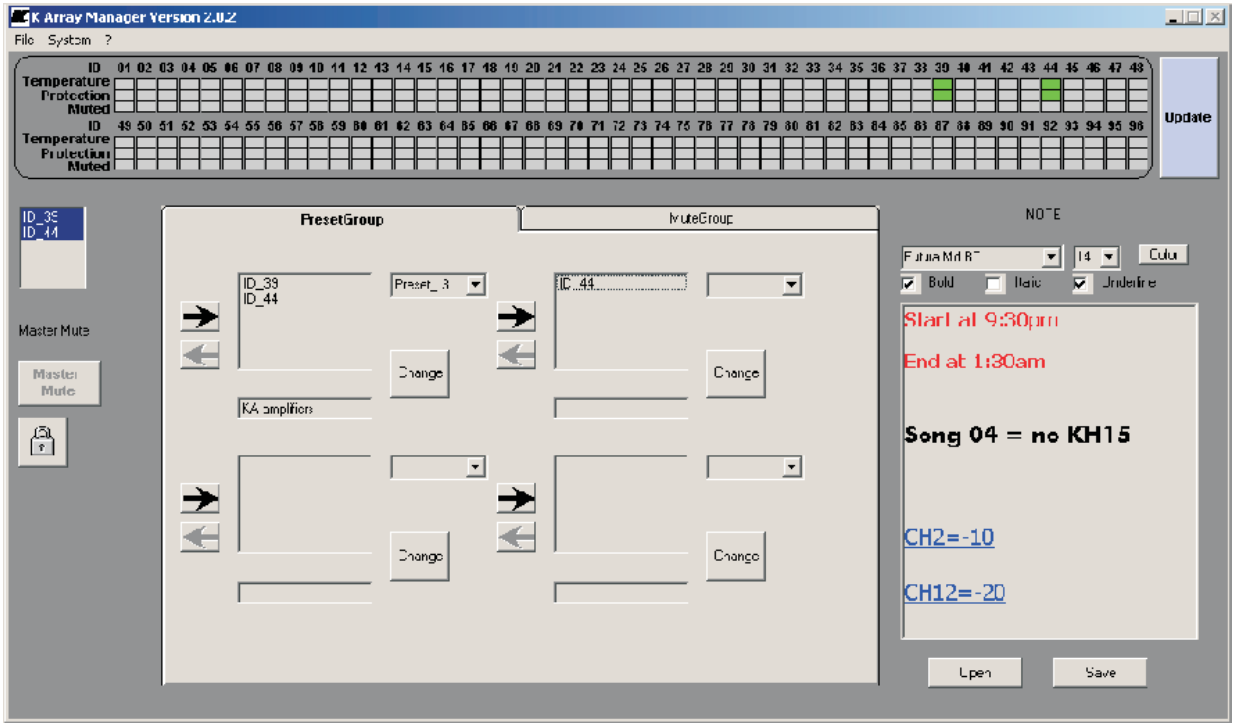


5.2 It is possible to assign names to the groups, just writing in the fields.

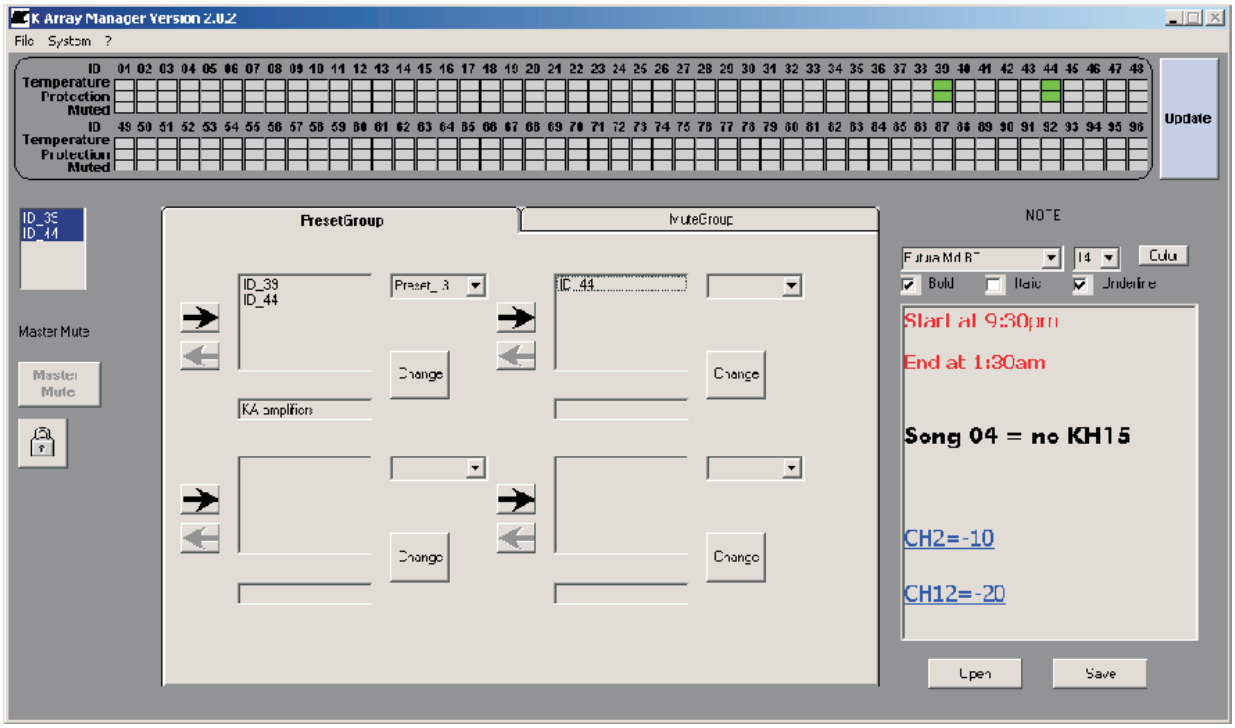
6. Preset groups

On the Preset Groups window, you can manage the modules Presets as groups, up to 4 different.

6.1 Choose the modules from the list on the right
Press the right arrow of the group that you prefer, to add the modules
Select the number of the preset you want to choose, after press Change button



6.2 It is possible to assign names to the groups, just writing in the fields.

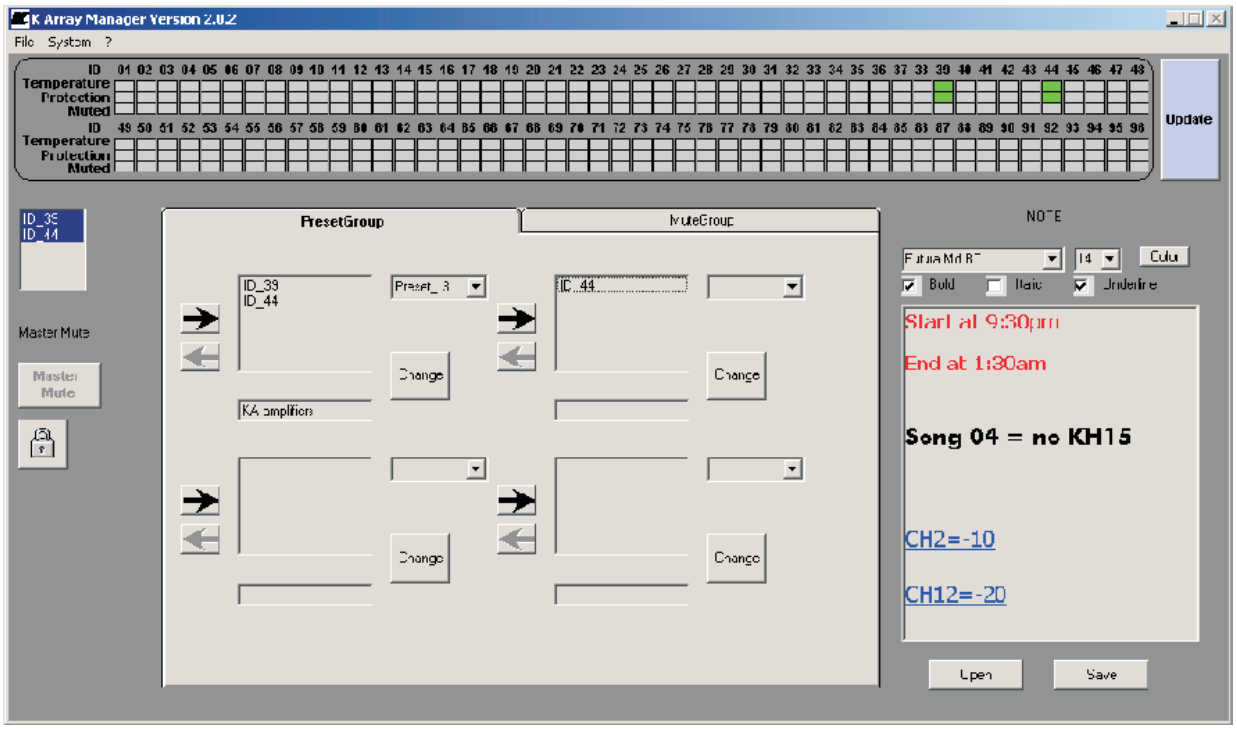


7. Text editor

It is available a text editor on the software, it can manages .RTF files.

8. Master Mute control

It is possible to Mute all the modules connected just pressing Master Mute button.
To protect from accidental pressing of this button, you will need to Unlock by pressing the Unlock button below it.



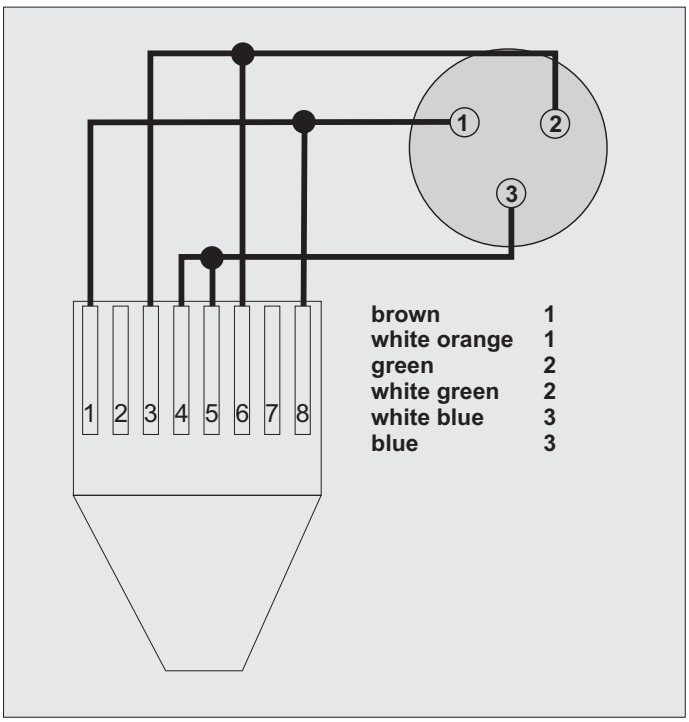
9. Exit option

When you choose to exit from the software, will appear an alert window that alert you about Unmuting all the modules connected, this is important because the Mute function is controlled only by software.

10. Save and Load

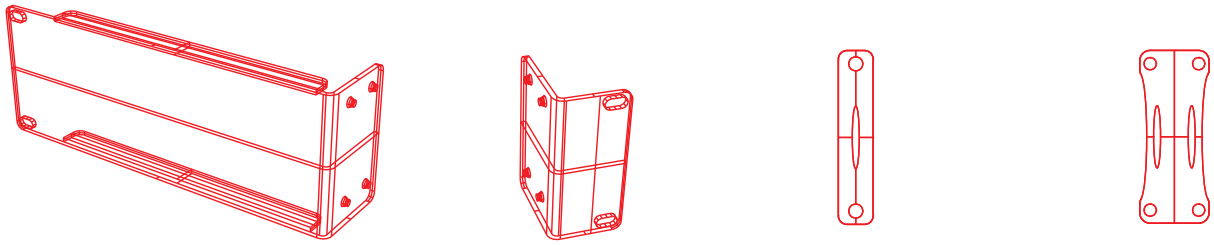
It is possible to save the speakers configuration for Mute and Preset Groups, just Save a .CONF file.

It is possible to use XLR adapters for connections, here below, the connection schematic.

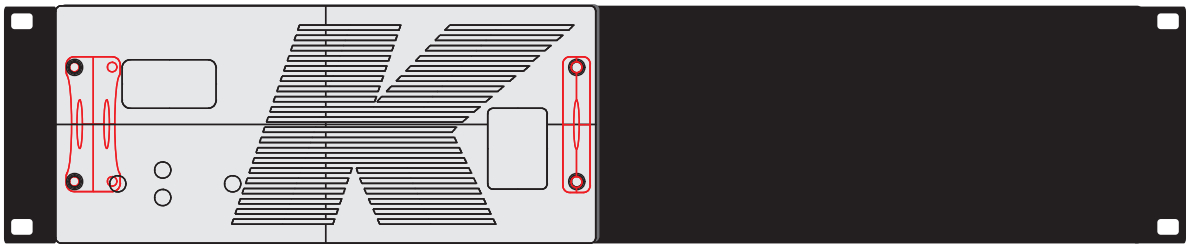


	KA10	KA40	KA10-10
	Output power		
Max power 4Ω	2 x 500 w(EIAJ)	2 x 2000 w(EIAJ)	4 x 500 w(EIAJ)
Max power 8Ω	2 x 260 w(EIAJ)	2 x 1200 w(EIAJ)	4 x 260 w(EIAJ)
Max power - bridged 8Ω	1000 w(EIAJ)	4000 w(EIAJ)	
Connectors	2 x 4-pin Speakon	2 x 4-pin Speakon	2 x 4-pin Speakon
Speakon 1 wiring	pin 1+,1- = CH1 pin 2+, 2- = CH2	pin 1+,1- = CH1 pin 2+, 2- = CH2	pin 1+,1- = CH1 pin 2+, 2- = CH3
Speakon 2 wiring	pin 1+,1- = CH2 pin 2+,2- = N.C.	pin 1+,1- = CH2 pin 2+ 2- = N.C.	pin 1+,1- = CH2 pin 2+ 2- = CH4
	Audio specs		
Slew Rate 8Ω	50V/μS	30V/μS	50V/μS
S/N Ratio	>105 dB/A	>108 dB/A	>105 dB/A
Distortion (THD, DIM,SMPTE)	<0.5%	<0.5%	<0.5%
Input impedance	20K bal. 10K unbal.	20K bal. 10K unbal.	20K bal. 10K unbal.
Gain	32 dB	38 dB	32 dB
Output	Unbalanced to ground	Unbalanced to ground	Unbalanced to ground
Bandwidth	10 Hz - 30 KHz	5 Hz - 25 KHz	10 Hz - 30 KHz
Damping Factor 8Ω (100Hz)	>500	>300	>500
	Protection		
Thermal protection	Yes	Yes	Yes
Short circuit / over-load	Yes	Yes	Yes
Clip limit, Analog signal limit	Yes	Yes	Yes
	Audio Input		
Connectors	2 x M + 2 x F bal. 3-pin XLR	2 x M + 2 x F bal. 3-pin XLR	2 x M + 2 x F bal. 3-pin XLR
Wiring	1=gnd 2=hot 3 = cold	1=gnd 2=hot 3 = cold	1=gnd 2=hot 3 = cold
	Remote control Input		
Connectors	2 x female 8-pin RJ45	2 x female 8-pin RJ45	2 x female 8-pin RJ45
	Remote control		
Protocol	RS485 - V2 software	RS485 - V2 software	RS485 - V2 software
	Power Input		
Connectors	2 x PowerCon IN/OUT	2 x PowerCon IN/OUT	2 x PowerCon IN/OUT
	AC power		
Operating range	EU 210-240 Vac 50Hz USA 100-120 Vac 60Hz	85 - 270 Vac 50/60Hz Universal up to 400 Vac	EU 210-240 Vac 50Hz USA 100-120 Vac 60Hz
I. nom / P.nom (KA40)	2.6 A / 115 Vac - 1.6 A / 230 Vac	900 Vac	3.6 A / 115 Vac - 2.2 A 230 Vac
Minimum operation voltage	95 Vac - 195 Vac	70 Vac	95 Vac - 195 Vac
Maximum operation voltage	125 Vac - 205 Vac	400 Vac	125 Vac - 205 Vac
Max continuous and burst current	EU 5A(>10s) - 10A (<1s) USA 10A(>10s)-20A(<1s)	12A(>10s) - 24A(<1s)	EU 6.3A(>10s) - 12A (<1s) USA 12A(>10s) - 24A(<1s)
	Physical		
Dimensions	20 (1/2 U rack) x 8.8 (2U rack) x 44.5 cm - (7.87"x 3.46"x 17.52")		
Weight	3.5 Kg (7.72 lbs)	6 Kg (13.23 lbs)	4.8 Kg (10.58 lbs)
	Notes for data New materials and design are introduced into existing products without previous notice. Present systems may differ in some respects from those presented in this brochure		

RACK ADAPTERS INCLUDED

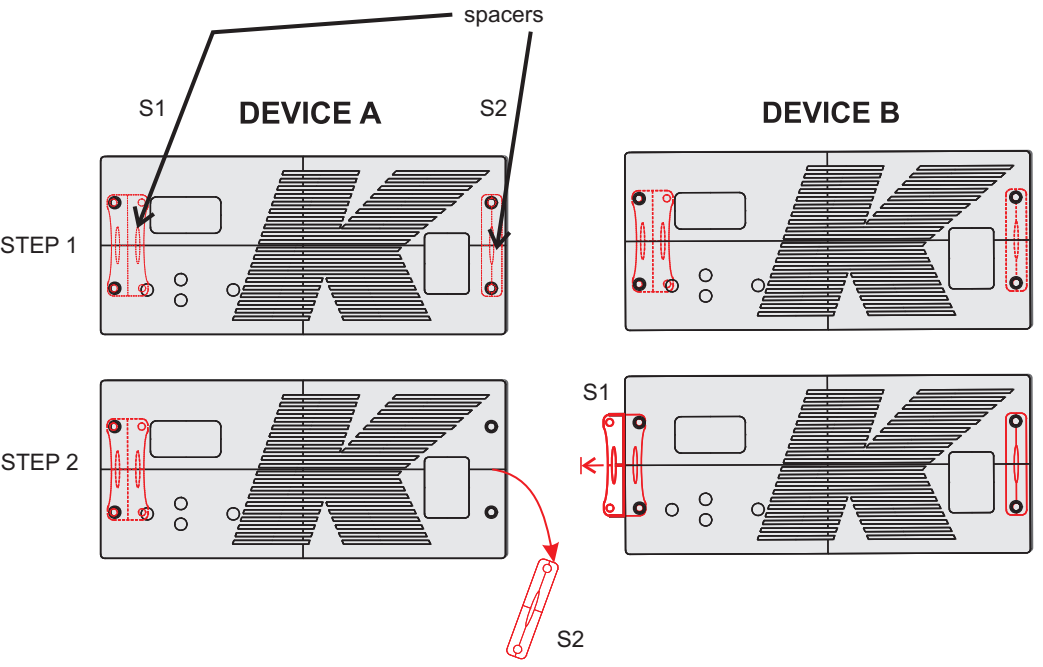


SINGLE RACK



Fix by the supplied screws the two rack adapters as shown in the drawing.

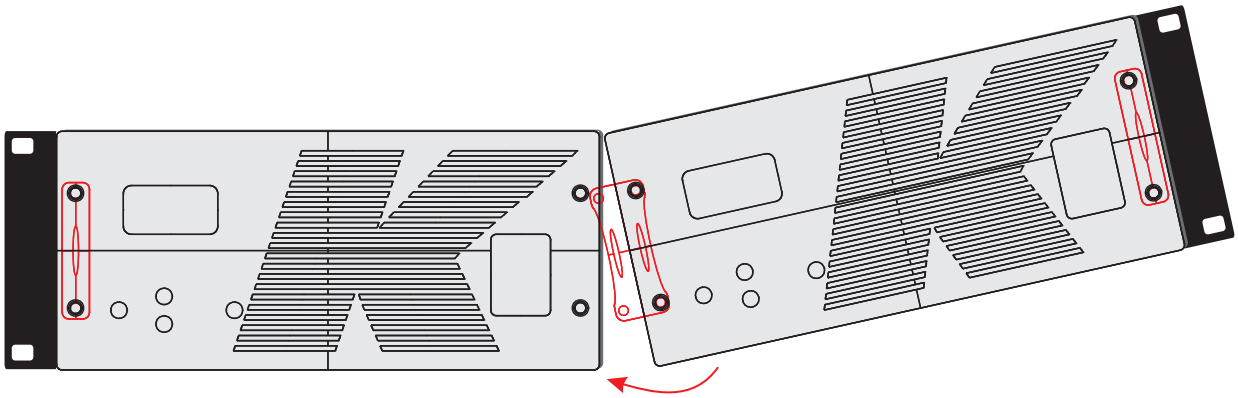
DOUBLE RACK



Unscrew the 4 anchor points of the front panels and remove it.

Remove the smaller steel spacer (S2) from DEVICE A and traslate S1 on DEVICE B like in the draw beside. Then refit the front panels fixing all the 4 screws on DEVICE B and just the two ones through S1 on the DEVICE A.

STEP 3

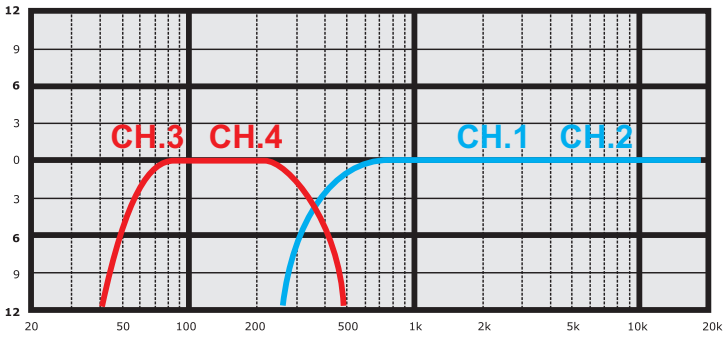


Plug the two devices together by the last two screws and fix the rack adapters.

KA10-10 RELEASE .C

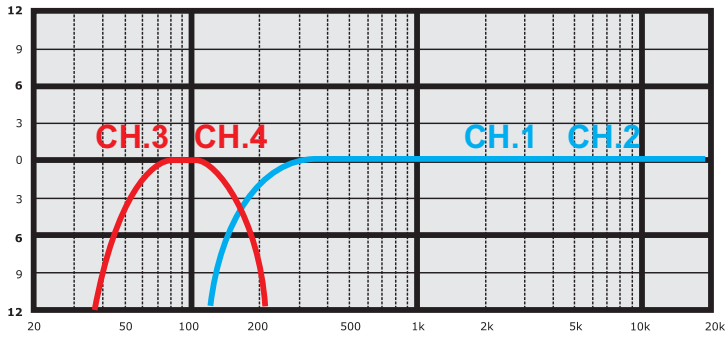
KZ+KS

CHs 1,2.KZ10 flat
CHs 3,4.KKS50 LP 350Hz flat



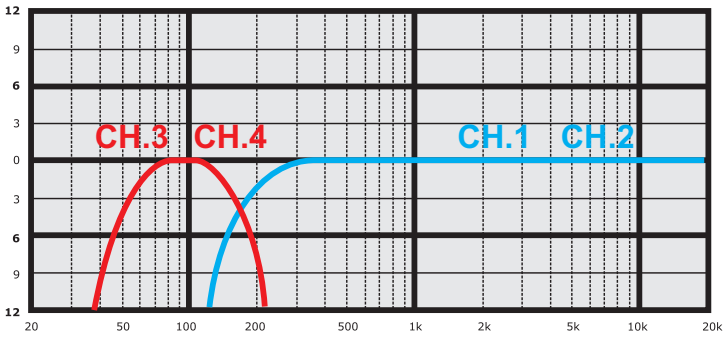
KT+KS

CHs 1,2.KT20 flat
CHs 3,4.KKS50 flat



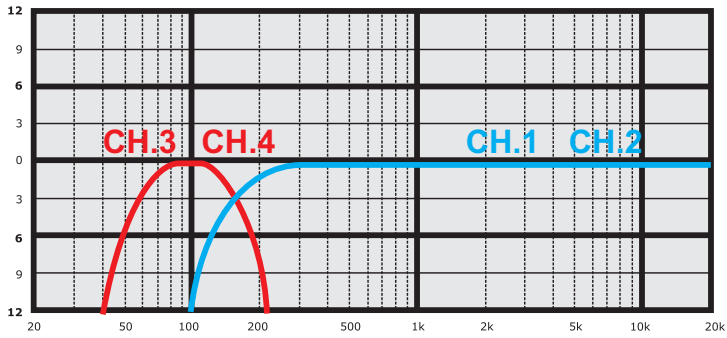
KV+KS

CHs 1,2.KV50 flat
CHs 3,4.KKS50 flat



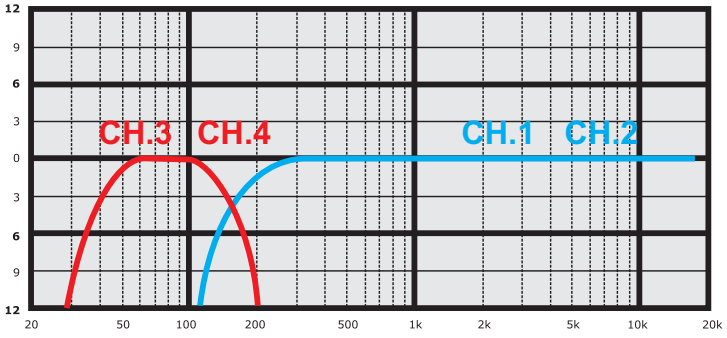
K5+KS

CHs 1,2.KK50 flat
CHs 3,4.KKS50 flat



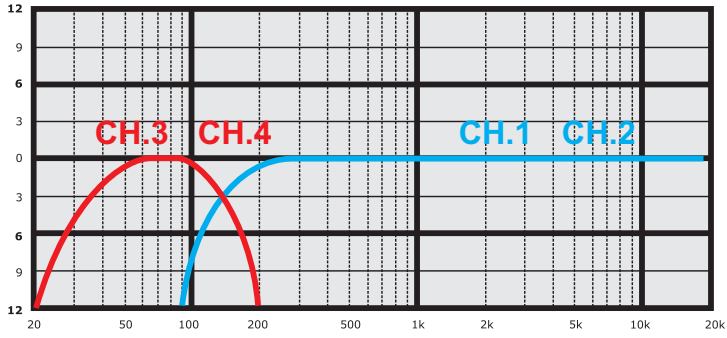
K1+L2

CHs 1,2.KK100 flat
CHs 3,4.KL12 flat



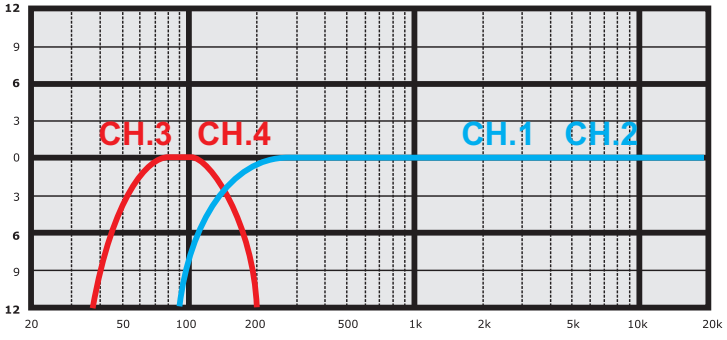
K2+L8

CHs 1,2.KK200 flat
CHs 3,4.KL18 flat



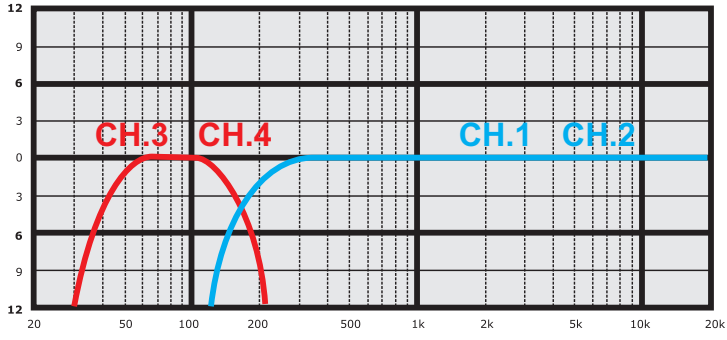
K2+L2

CHs 1,2.KK200 flat
CHs 3,4.KL12 flat



KT+L2

CHs 1,2.KT20 flat
CHs 3,4.KL12 flat

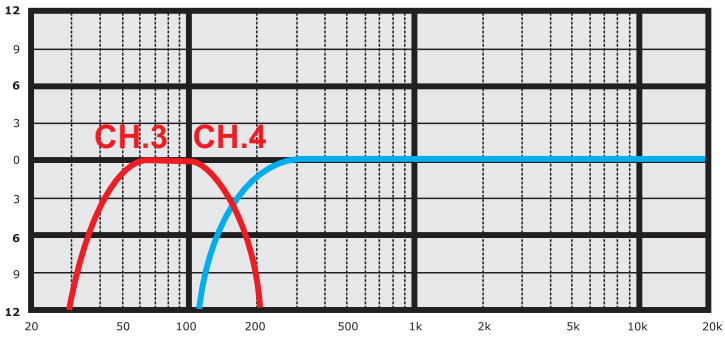


HP Sound Equipment s.r.l. - www.k-array.com
Viale Roma 7/i 50037 San Piero a Sieve (Firenze) Italy - tel +39 055 8487222 fax +39 055 8487238 e-mail: info@k-array.com

KA10-10 RELEASE .C

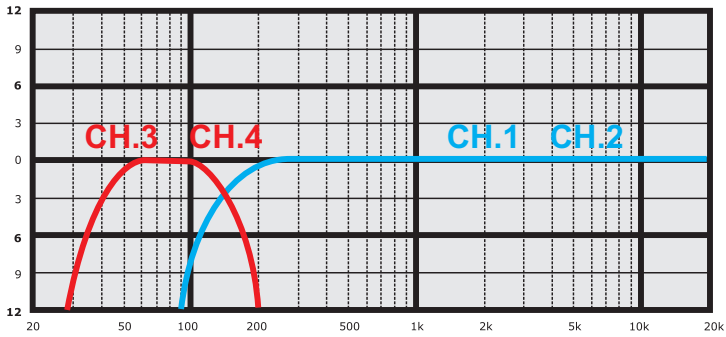
KV+L2

CHs 1,2.KV50 flat
CHs 3,4.KL12 flat



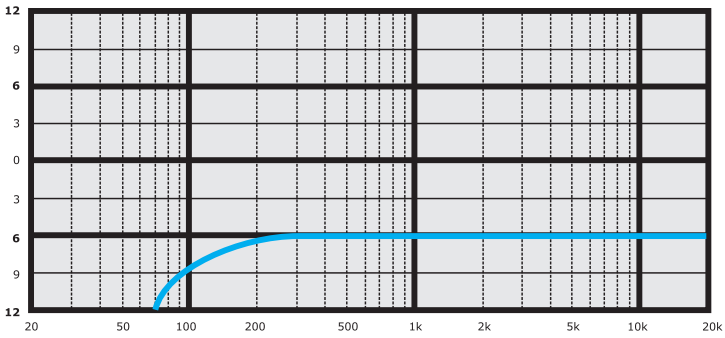
K5+L2

CHs 1,2.Kk50 flat
CHs 3,4.KL12 flat



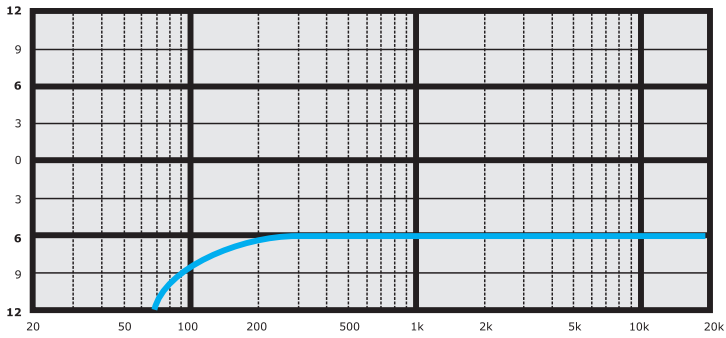
KTsolo

CHs 1,2,3,4 KT20 extended EQ



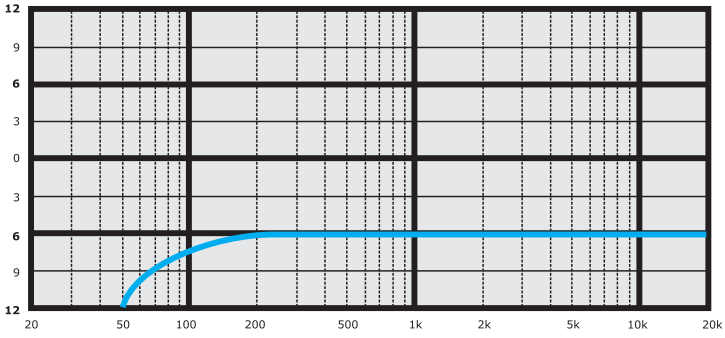
KVsolo

CHs 1,2,3,4 KV50 extended EQ



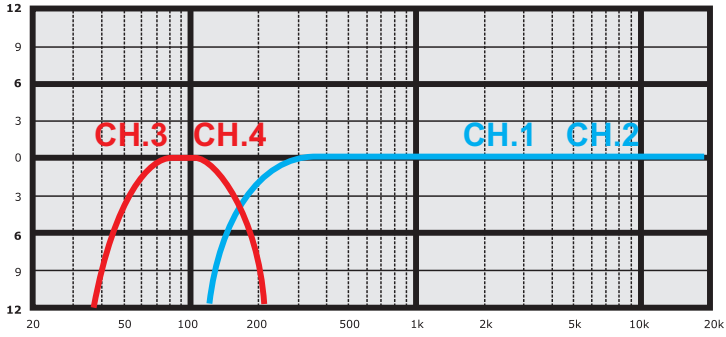
K5solo

CHs 1,2,3,4 KK50 extended EQ



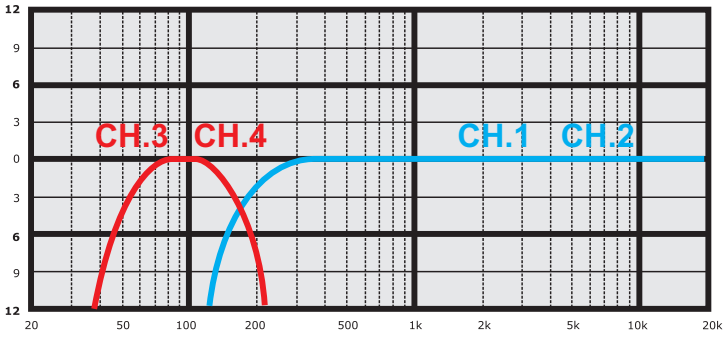
KT+KS

CHs 1,2.KT20 flat
CHs 3,4.KKS50 flat



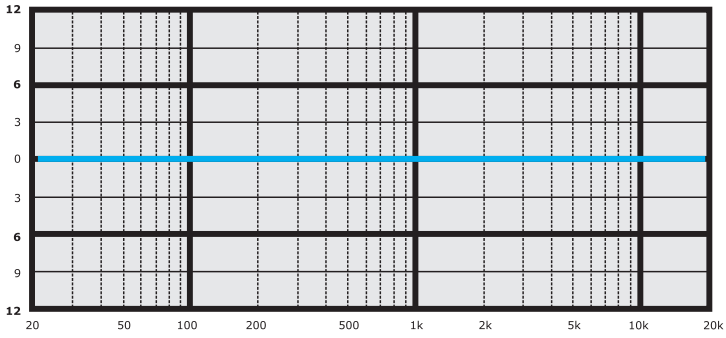
KV+KS

CHs 1,2.KV50 flat
CHs 3,4.KKS50 flat



Flat

CHs 1,2,3,4 flat



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Viale Roma 7/i 50037 San Piero a Sieve (Firenze) Italy - tel +39 055 8487222 fax +39 055 8487238 e-mail: info@k-array.com

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by

HP Sound Equipment s.r.l.

Viale Roma 7/i

50037 San Piero a Sieve (Firenze)

Italy

tel +39 055 8487222 fax +39 055 8487238

e-mail: info@k-array.com